developed these tumors. This has potential implications for schools, office buildings, and other workplaces that use toilet and urinal deodorizers containing this substance. In most buildings, cleaning and maintenance personnel would probably have the most contact with these products. However, the so-called air freshener is also used in veterinary lice medicines, as a veterinary disinfectant for lesions and incisions, and in chemical manufacturing. Finally, it enters the food supply when it is used on livestock that subsequently eat or inhale it. The chemical is also known as naphthalin, naphthaline, naphthene, tar camphor, and white tar.

Studies from the widely respected NTP at the National Institute of Environmental Health Sciences have prompted changes in how substances are handled in the workplace, homes, and the overall environment since the program began some 23 years ago. In NTP's 500th two-year rodent study, researchers exposed rats to naphthalene through inhalation — the route by which people are generally exposed. Rodents are the test animals of choice in part because they are inexpensive to use, easy to breed, and biologically similar to human beings. In addition, because they have been used in experiments for a long time, researchers have learned a great deal about them. In the naphthalene study overseen by Dr. Kamal Abdo, researchers controlled the exposure so that the rats got doses similar to those that workers and some consumers receive. After the exposures, both female and male rats developed cancerous tumors. When both sexes of test rats have the same outcome, the results have heightened implications for humans, according to NTP scientists.

In fact, NTP investigated naphthalene after the US National Institute of Occupational Safety and Health, Occupational Safety and Health Administration, and US Environmental Protection Agency — each represented on the NTP executive committee — nominated the chemical for study. Why did these US agencies request the study? They learned that workers in Germany exposed to naphthalene developed a variety of cancers, including nasal, laryngeal, stomach, and colon malignancies.

ASHRAE Standard 62.2P Revised, But BPCS Bars Move to Public Review

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard Project Committee 62.2P voted 8-2 in late January to accept its revised Standard 62.2P and recommend it be released for public review. Two days after this action at ASHRAE's *Winter Meeting* in Atlanta, Georgia, however, the Gas Appliance Manufacturers Association and the National Association of Home Builders (NAHB) appealed to the ASHRAE Board Policy Committee on Standards (BPCS). BPCS voted not to release the proposed residential ventilation standard for public comment and asked Standard Project Committee 62.2P to "work further toward achieving consensus [within ASHRAE]," Max Sherman, chairman of Standard Project Committee 62.2P, tells ***IEQS***.

It marked another detour in the long and winding road that the proposed standard and its technical committee have traveled since the committee began working with stakeholders to develop the standard in 1996. "Consensus within ASHRAE" is a somewhat nebulous one-year-old requirement that high-profile standards and proposed standards must meet before they are released for public review. Sherman says he is disappointed at the BPCS decision, "because I think the committee has come very far to be where it is, but we will strive to do better." He adds, "I've asked the Board Policy Committee on Standards for guidance on how to proceed." He was uncertain whether BPCS might, upon further review, determine that his committee had met consensus within ASHRAE, or alternatively might require that Sherman and his troops take additional steps.

Standard 62.2P, *Ventilation for Acceptable Indoor Air Quality in Low-Rise Residential Buildings*, would establish the first-ever US minimum requirements for indoor air quality in low-rise (three or fewer stories) housing. Presuming it meets muster within the next two months or so, Standard 62.2P would still be released for its second public review sometime this spring or summer. Coincidentally, Sherman was nominated by

the ASHRAE Nominating Committee to join the ASHRAE Board of Directors. Nominees must be elected by the society membership but are nominated unopposed. If elected, Sherman would join the board in late June to start the society's new fiscal year.

Public Input and Revisions to Standard

Before Standard 62.2 committee members recommended the proposed standard for public review, the committee fielded 12 hours of public questions, comments, and concerns during two "issue resolution" meetings on January 26-27. The questions and comments — which at times were sharply worded and elicited sharp replies — mainly came from representatives of the home-building, appliance, and natural gas industries that the proposed standard would impact. Afterward, committee members broke into subcommittees, which spent additional time making changes based on the public input. Finally, the full committee reconvened on January 28 for almost six more hours of discussion and votes on 13 separate changes before the final vote to recommend its release to the public. The committee had already made many of these changes "in principle" at an unofficial meeting in November 2000, and ***IEQS*** reported those changes last month. In Atlanta, the committee made those changes official, though it softened or revised a couple based on the comments it heard there. Those changes:

- Reduced the proposed mechanical ventilation to 7.5 feet per person plus 1 cfm per 100 square feet of floor space and allowed an infiltration credit of 2 cfm per 100 square feet of floor space.
- Eliminated a requirement for carbon monoxide (CO) detectors and inserted requirements for source control of pollutants.
- Required testing of air handlers or return ducts in garages for tightness as a safeguard against CO leakage into living space.
- Required that the appropriate party perform a backdraft test in new homes with large exhaust fans (e.g., powerful range hoods) unless those large exhaust fans have a compensating supply fan connected to them.
- Required that kitchens with unvented appliances have a range hood or large vent in the kitchen to the outdoors and eliminated language that would have allowed a kitchen window alone to provide kitchen ventilation.

In addition, the committee:

- Dropped a proposed requirement that the alternative supply ventilation system for new homes with large exhaust fans be interlocked to the exhaust fan system, requiring instead that a kitchen be vented at least as well as a bathroom (50 cfm).
- Declined to allow an infiltration credit beyond the existing default (2 cfm/100 ft^2).
- Replaced "return air" with the words "recirculated air" in Section 6.8 of the standard.
- Changed Section 6.8 "Minimum Filtration" to state in part: "Mechanical systems that supply air to an occupiable space through ductwork exceeding 10 feet (3 meters) in length and through a thermal conditioning component…." Before, it had used "or" rather than "and" after the words "exceeding 10 feet (3 meters) in length."
- Voted to keep local ventilation rates in kitchens at 5 kitchen-air changes per hour and in bathrooms at 20 cfm (10 l/s) in Tables 5.1 and 5.2 under the proposed standard.
- Required an exhaust fan in all rooms with unvented combustion appliances (e.g., gas fireplaces lacking vents also known as "vent-free heating appliances").
- Voted down a motion that the proposed standard not be approved as a code-intended standard.

Whither Standard 62.2P?

It is too soon to say when, or even if, this proposed standard for minimum indoor air quality will become official. Several stakeholders made it clear during the Atlanta discussions in January that they remained unhappy with the proposal, and their subsequent visit to BPCS confirmed it. Even if BPCS releases the standard for public review, these groups are clearly ready to continue their fight to stop it. They could attempt to further stall the standard by asking ASHRAE to perform research to justify its ventilation and certain related requirements. Such studies might take years.

Pointedly, Tom Kenney is a voting member of Standard Project Committee 62.2P and represents the interests of builders, specifically NAHB. After the committee's final vote on January 28, Kenney told his fellow committee members that "NAHB has observed there has been little research to justify the ventilation requirements in this standard. I want to move that we request that ASHRAE, NAHB, and HUD [US Department of Housing and Urban Development] do research on identifying regional and national indoor air quality conditions" and develop ways to deal with them.

In response, Sherman suggested that Kenney make such a motion to ASHRAE's Environmental Health Committee or to its research subcommittee.

Committee Makes Progress on ASHRAE Standard 62.1 Changes

The committee revising the American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1, *Ventilation for Acceptable Indoor Air Quality,* recommended several addenda for publication at the ASHRAE *Winter Meeting* held January 27-31 in Atlanta, Georgia. The two bodies are separate and adopt standards independently of one another. In the case of Standard 62.1 — which sets minimum indoor air quality standards for buildings except residential housing of three or fewer stories — ANSI adopted the ASHRAE standard after determining that it met certain ASHRAE and ANSI requirements.

Over the past three years, ASHRAE has been replacing certain wording in ANSI/ASHRAE Standard 62.1 with requirements in code-like language that local code authorities could adopt and enforce. In Atlanta, the ASHRAE Standard Standing Project Committee 62.1 voted to recommend Addendum 62*s* and Addendum 62*q* for publication. Publication would make them official parts of the code-intended standard.

Addendum 62*s* would replace Section 5.8 of the existing standard and would require a MERV 6 filter upstream from cooling coils and other wetted surfaces. Section 5.8 does not specify a filter rating. The MERV 6 filter would capture more particulates and reduce the dirt buildup on ventilation components likely to get wet. This would reduce the possibility that microbes would grow on these wet components to foul IAQ.

Addendum 62*q* would delete terms not used in the standard or that have commonly understood definitions, and it would clarify several other terms in Section 3 of Standard 62.1. These include deletions of definitions for such terms as "absorption" and "fumes," and clarifications of such terms as "air, exhaust," "air, makeup," and "air, transfer."

Both the ASHRAE Standards Committee and the ASHRAE Board of Directors must approve publication of these addenda, and persons or organizations may subsequently appeal their publication during the 15 days after the Board of Directors approves it.

Standard 62.1 committee members also recommended Addenda 62*ab*, 62*k*, and 62*x* for public review. Addendum 62*ab*, which has not been through public review, would replace Section 5.6, which requires that buildings have spot-exhaust ventilation to control contaminants from local sources. Addendum 62*ab* specifies that the port on equipment with an exhaust-ventilation port must be connected to an exhaust system. Addendum 62*k*, which would undergo its third public review, would replace Section 4. It would add an informative appendix that makes suggestions that assist users and enforcement agencies in understanding how to apply and comply with the standard in new and existing buildings and when making additions, repairs, and replacements (of building materials) to buildings. Addendum 62*x* would add a section to address issues about building envelopes, such as the infiltration of moist outdoor air that could promote microbial growth leading to IAQ problems. These problems also include moving pollutants from parking garages. It was previously combined with design requirements that dehumidification systems limit indoor relative humidity in occupied spaces to no more than 65% and maintain a net positive pressure "in the absence of wind and stack effect" during dehumidification. This would replace requirements now in Section 5.10.